



Biology and Healing Properties of *Pirus Communis* L. Types Introduced at Kashkadarya Scientific Experimental Station

1. I. Yu. Hayitov
2. M. A. Sharopova
3. Rakhmonov Rashid Rakhimovich

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Annotation. In the article, the biology, phenology, growth rhythm and yield of local and introduced pear varieties were studied in the Kashkadarya scientific experiment. Promising varieties were identified and recommendations for production were given.

Keywords: pear, fruit, nutrition, gardening, nutritious, medicinal, promising varieties, importance.

¹ Academician M.Mirzaev BU and VITI named after Kashkadarya Director of the Experimental Station Karshi

² Karshi State University, Karshi

³ Senior Lecturer of the Department of Medical Biology, Bukhara State Medical Institute (PhD)

The role and importance of the agricultural sector in meeting the food needs of the world population is growing day by day. Using the existing opportunities in our country, it is important to provide the population with a variety of fruits, increase productivity and interest, the introduction of scientific advances and modern approaches to horticulture.

In his Address to the Oliy Majlis on December 29, 2020, President Shavkat Mirziyoyev stressed that the key factor in reducing poverty and increasing the income of the rural population is to increase productivity and efficiency in agriculture.

Resolution No. PP-4575 of January 28, 2020 "On measures to implement the tasks set out in the Strategy of Agricultural Development of the Republic of Uzbekistan for 2020-2030" specifies the tasks of creating new orchards and reconstruction of old ones. In the horticulture of the Republic, a number of measures are being taken to transfer pear cultivation to high-efficiency intensive orchards with weak growing stems. Each fruit-growing region of Uzbekistan has its own localized and imported fruit varieties. Improving the yield and quality of early ripening fruit varieties is one of the key factors in horticulture for the conditions of the republic. Testing them in intensive garden conditions as soon as possible, determining the level of efficiency, and developing technologies for growth and development are necessary for further research and the needs of the population. Of course, when building an intensive garden, great care should be taken in choosing a variety for them. This is because the complex of varieties in many ways determines the productivity of the garden and its economic

efficiency. When choosing a variety in the area where the garden is established, choose the varieties that grow well, develop, yield, fruit quality and have high economic efficiency. This requires the selection of varieties based on the soil climatic conditions of each farm and its direction [1].

The article provides information about the introduced and local pear varieties in Kashkadarya region, the technology of their cultivation and care.

Research methods. In the course of research, sorting of fruits by Michurin (1973), growth dynamics of trees V.V.Smirnova and A.A.Molchanova (1964), mathematical statistics N.L. Udolskaya (1976) methods were used.

Research results and their analysis. The climatic conditions of Kashkadarya region significantly hinder the growth and reproduction of fruit trees, which have high useful properties, do not cause difficulties in planting and show results in a short time. In this regard, Academician M. A number of research works are being carried out jointly by the Mirzaev KU and VITI Kashkadarya Research and Experimental Station and the Department of Microbiology and Biotechnology of Karshi State University. One such fruit tree is *Pyrus communis* L.

Pears - *Pyrus communis* L. In ancient Greece, pears were called "grace of the gods." It is naturally distributed in Eurasia, East Asia, China, as well as North Africa, Europe, the Tien Shan Mountains, Japan, Asia Minor, and Iran. Natural areas are also found in Central Asia. Pear is a tree of the Ranoguldosh family, up to 20-30 m tall. The leaves are round or ovate, banded, arranged in a series. The white or pink, five-lobed flowers are arranged in a set of 6 to 12 thyroid flowers. Fruit - pear-shaped, ovoid or round, green, yellow, sometimes reddish on one side, sweet or sour-sweet flavor, multi-seeded, juicy apple-type fake fruit. It blooms in April and ripens in June-October.

Based on the above beneficial properties, the phenological characteristics of trees planted in 2015 in the collection gardens of pear varieties introduced at the experimental station were observed. Pear trees bloomed later than legumes. Therefore, spring did not suffer relatively from the unexpectedly cold days. The longer flowering period (20-25 days) allowed them to be pollinated from the outside. According to our observations, pear varieties are more resistant to the heat of summer than apple varieties. In pear varieties, flower buds began to appear in the first decade of March, and flower buds began to appear on the 15th to 20th of March. As a result of the early onset of spring in 2016, flower buds were observed from 24 February to 29 February. The onset of the flowering phase lasted from March 1 to March 4, while full flowering lasted from March 10 to March 15. The flowering period lasted from 20 to 28 days. In 2016, the harvest was observed in varieties GD-25-14, Nashvati, Feruzy, Dilafruz, Medovoy, Tabassum, GD v-18, Sidnets Kifera, Dilbar, Lyubimitsa Klappa, Wildms, Opty, Untitled. However, in Nashvati iz Kryma, Nashvati (II), Azamat, Star Krymson varieties, no trace elements were observed this year. In 2017, yield elements were observed in all pear varieties, but yield elements were not observed in Medavoy and Azamat varieties. From 2021, all pear varieties began to bloom and bear fruit.

Pear varieties have vegetative and mixed buds. While vegetative buds usually allow twigs to grow, fruit buds and leaves are formed from mixed buds. Most apple and pear varieties require cross-pollination with other varieties for fruiting. It has been observed that some pear varieties bear fruit by self-pollination without pollination with other varieties, and such fruits are usually seedless. Below we will talk about some varieties in collection gardens.

The height of the **Crimean Nashvatisi** variety is 350 ± 21.0 cm, the opening of the leaf buds began on March 18, the flowering period is from March 22 to April 12, the fruits begin to ripen on August 8, the height of the stem is 47 ± 3.5 cm, the circumference is 27.5 ± 1.41 cm, gave a rod up to 113 ± 9.21 cm per year, the initial circumference of the twig was 4.2 ± 0.31 cm, the end circumference was 1.8 ± 0.05 cm, the number of buds on the twig was 24 ± 1.43 , the width of the leaf was $7, 3 \pm 0.62$ cm, height 9.3

± 0.72 cm, leaves yellow from October 6, shedding from October 16, ending until November 25, vegetation period 252 ± 19.3 days, fruit color blue-red, taste sweet, the average weight of one fruit was 186 ± 16.2 g.

Tomorrow 25 - 14 (Early) variety height 280 ± 19.1 cm, leaf buds begin to write from March 22, flowering period from April 2 to April 12, fruit ripening from August 6, stem height 44 ± 3.21 cm, stem circumference 17.5 ± 1.32 cm, gives a branch up to 91 ± 7.61 cm per year, the initial circumference of the branch is 4.8 ± 0.36 cm, the end circumference is 2 ± 0.012 cm, the number of buds on the branch is 27 ± 1.62 , the leaf width is $5, 4 \pm 0.34$ cm, height 8.5 ± 0.68 cm, leaves begin to turn yellow from October 8, shedding from October 18, fully shed until November 27, vegetation period 250 ± 21.2 days, fruit color reddish blue, sweet, the average weight of a single fruit was 185 ± 15.8 g.

Nashvati variety height 260 ± 22.5 cm, leaf buds started to bloom from April 2, flowering from April 6 to April 18, fruit ripening from August 12, stem height 58 ± 3.21 cm, strain circumference 19.5 ± 1.53 cm, one yields a stem up to 88 ± 6.23 cm per year, the initial circumference of the stem is 4 ± 0.29 cm, the end circumference is 2.5 ± 0.14 cm, the number of buds on the stem is 30 ± 0.21 , the leaf width is $6.1 \pm 0, 5$ cm, height 9.7 ± 0.82 cm, the leaves began to turn yellow from October 10, the leaves began to shed from October 15 to December 1, the vegetation period was 243 ± 19.6 days, the fruit was blue-reddish-yellow, sweet, a single fruit average weight 254 ± 20.5 g.

Faruzi variety height 252 ± 2.32 cm, leaf buds started from April 2, flowering period from April 6 to April 12, fruit ripening from July 10, strain height 44 ± 2.73 cm, strain circumference 18.8 ± 0.72 cm, one 51 ± 3.62 cm per year, the initial circumference of the branch was 3.4 ± 0.21 cm, the end circumference was 1.9 ± 0.13 cm, the number of buds on the branch was 24 ± 2.21 , and the leaf width was 5.1 ± 0.38 cm, height 7.3 ± 0.61 cm, yellowing from October 10 to October 15, lasted until November 27, vegetation period 240 ± 21.3 days, fruit color reddish-yellow, taste sweet, one fruit average weight 270 ± 21.8 g.

Winter Nashvati №2 variety height 320 ± 28.3 cm, leaf buds opened on March 22, flowering period from March 29 to April 12, fruit ripening on August 8, stem height 55 ± 3.81 cm, strain circumference $24.5 \pm 1, 86$ cm, gave a branch up to $81 \pm$ cm in a year, the initial circumference of the branch is 4.5 ± 0.38 cm, the end circumference is 2.5 ± 0.16 cm, the number of buds on the branch is 21 ± 1.16 , the leaf width is 6.5 ± 0.51 cm, height 9.7 ± 0.68 cm, yellowing from October 12, shedding on October 15, complete until November 27, vegetation period 250 ± 12.3 days, fruit color blue-red, taste sweet, one average weight of fruit 189 ± 16.7 g.

Dilafruz variety height 370 ± 26.8 cm, leaf buds open on March 22, flowering period from April 2 to April 12, fruit ripening begins on August 6, stem height 45 ± 3.41 cm, strain circumference 20 ± 1.65 cm, one 59 ± 4.21 cm per year, gives a branch up to 2.8 ± 0.43 cm, the initial circumference is 0.5 ± 0.04 cm, the number of buds on the branch is 21 ± 1.62 , the leaf width is $7.9 \pm$ cm, height 11 ± 0.92 cm, leaf yellowing from October 8, leaf shedding on October 15, ending on November 3, vegetation period 226 ± 19.5 days, fruit color reddish-yellow, sweet taste, average weight of one fruit 79 ± 6.51 g.

Myodovoy variety height 290 ± 21.3 cm, leaf buds opened from March 27, flowering period from April 6 to April 18, fruit ripening from August 12, stem height 37 ± 2.65 cm, strain circumference 25 ± 1.96 cm, per year 112 ± 10.9 cm, the initial circumference of the branch is 5 ± 0.4 cm, the circumference of the tip is 3.5 ± 0.28 cm, the number of buds on the branch is 29 ± 2.11 , the width of the leaf is 6.5 ± 0.56 cm, height 10.7 ± 9.12 cm, leaves began to turn yellow on October 10, shedding on October 20, expired on December 1, vegetation period 248 ± 21.6 days, fruit color reddish blue, sweet, average weight of fruit 164 ± 14.8 g.

Starkrimson variety height 150 ± 13.8 cm, leaf buds open from March 27, flowering from April 6 to April 18, fruits ripen from August 12, strain height 44 ± 3.21 cm, strain circumference 13 ± 9.11 cm, $66 \pm$ per year 5.13 cm, initial circumference of the branch 5.2 ± 0.41 cm, end circumference 3 ± 0.21 cm, number of buds on the branch 20 ± 1.81 , leaf width 6.2 ± 0.57 cm, height 9, 6 ± 0.81 cm, fruit color blue-red ink, sweet taste, average weight of fruit 141 ± 13.5 g.

Smile variety height 265 ± 21.5 cm, leaf buds began to open from March 27, flowering period from April 4 to April 12, fruit ripening from July 10, strain height 35 ± 2.8 cm, strain circumference 20 ± 1.81 cm, per year Gave a rod up to 116 ± 9.63 cm, the initial circumference of the twig was 4 ± 0.31 cm, the end circumference was 3 ± 0.26 cm, the number of buds on the twig was 28 ± 2.21 , the width of the leaf was 7 ± 0.62 cm, and the height was 11.1 ± 10.3 cm, the leaves began to turn yellow on October 8, the leaves began to fall off on October 18, the end lasted until November 13, the growing season was 231 ± 11.8 days, the color of the fruit was reddish blue, sweet, the average weight of the fruit was 205 ± 18.3 g.

Durdona 8-18 (hybrid) variety height 310 ± 29.6 cm, leaf buds open on March 27, flowering period from April 2 to April 12, fruit ripening on August 6, stem height 54 ± 4.62 cm, strain circumference 15 ± 0.91 cm, gave the rod up to 35 ± 2.81 cm per year, the initial circumference of the branch was 2.3 ± 1.8 cm, the end circumference was 1.5 ± 0.12 cm, the number of buds on the rod was 15 ± 0.95 , leaf width 3.6 ± 0.28 cm, height 6.5 ± 0.53 cm, fruit reddish-yellow, taste medium sweet-sour, fruit average weight 77.5 ± 6.83 g.

Dilbar variety height 230 ± 21.3 cm, leaf buds recorded from April 2, flowering from April 6 to April 15, fruit ripening from August 10, stem height 45 ± 3.61 cm, strain circumference 18.5 ± 1.51 cm, 65 per year Gave a branch up to ± 4.91 cm, the initial circumference of the branch was 4 ± 0.31 cm, the end circumference was 2.8 ± 0.19 cm, the number of buds on the branch was 24 ± 1.96 , the width of the leaf was 5.2 ± 0.46 cm, height $11.3 \pm$ cm, yellowing from October 15, began to shed on October 25, full shedding on December 4, vegetation period 248 ± 21.6 days, fruit blue-red, taste sweet, the average weight of a single fruit is 175 ± 16.3 g.

Seyanets Kifera variety height 179 ± 16.1 cm, leaf buds recorded from April 2, flowering from April 6 to April 18, fruit ripening from August 18, strain height 46 ± 3.81 cm, strain circumference 9 ± 0.78 cm, 30 per year Gave a twig up to ± 2.71 cm, the initial circumference of the twig was 2.5 ± 0.18 cm, the end circumference was 2 ± 0.18 cm, the number of buds on the twig was 14 ± 1.21 , the leaf width was 3.6 ± 0.29 cm, height 8.2 ± 0.73 cm, began to turn yellow from October 12, shed from October 15 to November 3, vegetation period 216 ± 19.5 , fruit color blue-reddish-yellow, taste slightly tarnished, average weight of a single fruit 70 ± 6.31 g.

Lyubimitsa Klappa is a summer edible variety, the height of the variety is 240 ± 21.3 cm, buds were recorded from March 27, flowering from April 6 to April 15, fruit ripening from August 12, stem height 44 ± 3.97 cm, strain circumference 20 ± 1.8 cm, gave a rod up to 63 cm in a year, the initial circumference of the twig was 3 ± 0.21 cm, the end circumference was 2.2 ± 0.12 cm, the number of buds on the twig was 24 ± 1.92 , the width of the leaf was 6.3 ± 0.42 cm, height 9 ± 0.71 cm, leaves began to turn yellow from October 9, fully shed from October 20 to December 1, vegetation period 248 ± 13.5 days, fruit blue-reddish-yellow, sweet, fruit average weight 22 ± 1.81 g.

Williams variety height 236 ± 21.3 cm, leaf buds opened from April 2, flowering period from April 8 to April 12, fruit ripening from August 12, stem height 51 ± 3.82 cm, strain circumference 15 ± 1.32 cm, per year Gave a rod up to 70 ± 6.1 cm, the initial circumference of the twig was 3.5 ± 0.21 cm, the end circumference was 3 ± 0.22 cm, the number of buds on the twig was 28 ± 1.7 , and the leaf width was 3.5 ± 0.23 cm, height 6.8 ± 0.52 cm, from October 10 the leaves turn yellow, lasted from October

20 to December 1, the vegetation period is 243 ± 21.4 days, the fruit is blue-reddish-yellow, the taste is tachy, the average weight of the fruit is 171 ± 16 , 3 g.

Optyt variety height 178 ± 1.62 cm, leaf buds open from March 18, flowering period from March 22 to April 18, fruit ripening from August 10, strain height 52 ± 3.87 cm, strain circumference 11 ± 0.92 cm, 20 per year Gave a rod up to ± 1.72 cm, the initial circumference of the twig was 2.2 ± 0.16 cm, the end circumference was 1.5 ± 0.08 cm, the number of buds on the twig was 11 ± 0.81 , the leaf width was 5 ± 0.038 cm, and the height was 7 . 5 ± 0.58 cm, began to turn yellow from October 8, lasted from October 15 to December 1, the growing season was 257 ± 22.4 days, the color of the fruit was blue-reddish-yellow, the taste was sweet, the average weight of the fruit was 115 ± 10.6 g.

The height of the **July** variety is 330 ± 28.3 cm, leaf buds begin to record from March 18, flowering from March 22 to April 18, fruit ripening from August 12, strain height 52 ± 3.81 cm, strain circumference 28 ± 1.75 cm, 68 per year Gives a rod up to ± 0.49 cm, the initial circumference of the twig is 3.5 ± 0.21 cm, the end circumference is 2 ± 0.09 cm, the number of buds on the twig is 22 ± 1.82 , the leaf width is 5 ± 0.38 cm, height 10.3 ± 0.87 cm, from October 12 the leaves turn yellow, from October 22 to December 1, the vegetation period is 257 ± 13.21 days, the color of the fruit is reddish-yellow, the taste is tachy, the average weight of one fruit is 114 ± 10.81 g.

From ancient times the pear has many medicinal properties. The juicy, delicious fruit refreshes, relieves fatigue and tension, lifts the mood and gives a sense of well-being. Ripe fruits are used fresh, unpeeled and dried, peeled, canned. The fruit is used to make jams, pickles, compotes, jams, syrups, kvass, essences, candies and other products. Its essence is used in the preparation of lemonades, fruit drinks, cedar, wine and others. The composition of the delicious fruit is rich in biologically active substances, including sugars (glucose, fructose and sucrose), organic (malic, partially citric and other) acids, phytoncides, enzymes, pectin, additives and other substances. Vitamin C, V1, V2, V6, RR and E as well as carotene, biotin and pantothenic acid are found. Mineral compounds include salts of iron, potassium, magnesium, sodium, calcium, zinc, molybdenum, nickel, vanadium, iodine, fluorine and other elements. It has long been used in the treatment of various diseases. Ibn Sina used it in the treatment of wounds to stop diarrhea, quench thirst, and normalize bile. The decoction is used to relieve severe cough, to quench thirst when fever rises, as a driver in urinary, liver and gallbladder diseases in kidney stones [4].

The extremely fragrant varieties of pear are useful for patients suffering from tachycardia. Pear also normalizes and calms the heart muscle tissue, normalizing when the heart is beating fast. Doctors say that cooked pears cleanse the body and give strength. With a tincture made from pear juice, fruits and leaves, they quenched thirst when the temperature rose, and also cured malaria. It is a powerful tool against colds. It contains a lot of phenolic additives, which in turn strengthen blood vessels. Prevents developing memory loss (atherosclerosis). Freshly cut, boiled and cooked pears treat lung bronchitis, tuberculosis (tuberculosis), whooping cough and whooping cough. Due to the fact that pear contains a substance called dubil, it is useful in the treatment of diseases of the gastrointestinal tract, digestive system, in case of fungal and food poisoning. It is therefore advisable to consume pears more and regularly. It should be remembered that pears can never be eaten on an empty stomach. If possible, it is better to eat pears separately from other foods. Interestingly, the unripe raw fruit of pears can be easily eaten, even by patients with diabetes. Although freshly sliced pears are sweeter than apples, they contain very little sugar. This indicates that it contains very little organic matter. Pear is also a more dietary fruit because it is rich in micronutrients and activates the metabolic process. It is especially useful to drink without adding sugar to compotes, juices and tinctures made from it. Therefore, those who want to lose weight can eat as much as they want from pears and drink compote [7,8].

In summary, at a time when the world's largest pear-growing countries are China with 19.5 million tons, the United States with 0.73 million tons and Turkey with 0.47 million tons, the study of the

characteristics of pear varieties increase competitiveness, agricultural development, increase the number of grafts that allow to create an intensive garden, adapted to the soil and climate of the republic, develop water and feed regimes of new promising grafts, select the most suitable and improve the technology of growing seedlings and increase the export potential of the industry.

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